

Tourmaline-turquoise paragenesis in the phyllic alteration zone, copper, gold deposit, Kuh-Zar, South of Semnan

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Abstract: Torud-Chah Shirine magmatic arc is located in south of Semnan. This arc is composed of Cenozoic volcanic, pyroclastic and intrusive rocks. The Kuh-Zar in marning province of Bagho is outstanding with Cu-Au mineralization. Mining is restricted to hydrothermal alteration zones in the area. Alteration zones includes propylitic, phyllic, advanced argillic and silicic. The rare association of tourmaline as veinlets and dissemination spots with turquoise is visible in phyllic and advance argillic zones. EPMA data for mineral chemistry is indicated that tourmaline is from schorlite-dravite group. It is probable that tourmaline is generated from B-bearing fluids librated from metamorphic rocks in expense of muscovite in leached alteration zones. Petrographical and geochemical studies indicated that, leaching of hydrothermal fluids and influx of B from metamorphic rocks, have been formed tourmaline in the expense of muscovite in the groundmass. Turquoise is formed in relation to oxidation reactions of Cu-bearing sulphide minerals. Hydrolysis of alumino-silicates is taken place in acid environment and finally in corporation with P from leached fluids, formation of turquoise is occurred in expense of Al-rich mineral phases (alunite). So the overprinting of two distinct alterations including early tourmalinization and late turquoise formation is occurred.

Keywords: *Kuh-Zar; tourmaline; turquoise; mineral chemistry; alteration.*

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